

SCOPE OF WORK

- **SYSTEM SIZE:** 9280W DC, 11400W AC
- **MODULES:** (32) REC SOLAR: REC290TP2 BLK
- **INVERTER(S):**
(1) SOLAREEDGE TECHNOLOGIES: SE11400A-US WITH REVENUE GRADE METERING
- **RACKING:** SNAPRACK SERIES 100 UL; FLASHED L FOOT. SEE PEN D03.

GENERAL NOTES

- ALL WORK SHALL COMPLY WITH NEC 2011, IBC 2015, MUNICIPAL CODE, AND ALL MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS.
- PHOTOVOLTAIC SYSTEM WILL COMPLY WITH NEC 2011.
- ELECTRICAL SYSTEM GROUNDING WILL COMPLY WITH NEC 2011.
- PHOTOVOLTAIC SYSTEM IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER. SYSTEM COMPLIES WITH 690.35.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741.
- RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
- SNAPRACK RACKING SYSTEMS, IN COMBINATION WITH TYPE I, OR TYPE II MODULES, ARE CLASS A FIRE RATED.
- RAPID SHUTDOWN REQUIREMENTS MET WHEN INVERTERS AND ALL CONDUCTORS ARE WITHIN ARRAY BOUNDARIES PER NEC 690.12(1).
- CONSTRUCTION FOREMAN TO PLACE CONDUIT RUN PER 690.31(G).
- ARRAY DC CONDUCTORS ARE SIZED FOR DERATED CURRENT.
- 9.71 AMPS MODULE SHORT CIRCUIT CURRENT.
- 15.17 AMPS DERATED SHORT CIRCUIT CURRENT [690.8 (a) & 690.8 (b)].

LEGEND AND ABBREVIATIONS

SCALE: NTS

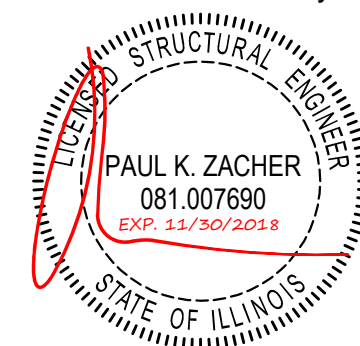
A	AMPERE
AC	ALTERNATING CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AZIM	AZIMUTH
COMP	COMPOSITION
DC	DIRECT CURRENT
(E)	EXISTING
EXT	EXTERIOR
FRM	FRAMING
INT	INTERIOR
LBW	LOAD BEARING WALL
MAG	MAGNETIC
MSP	MAIN SERVICE PANEL
(N)	NEW
NTS	NOT TO SCALE
OC	ON CENTER
PRE-FAB	PRE-FABRICATED
PSF	POUNDS PER SQUARE FOOT
PV	PHOTOVOLTAIC
TL	TRANSFORMERLESS
TYP	TYPICAL
V	VOLTS
W	WATTS

REV	NAME	DATE	COMMENTS

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For Structural Only



VICINITY MAP



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PROJECT NUMBER:
711R-420ULEV

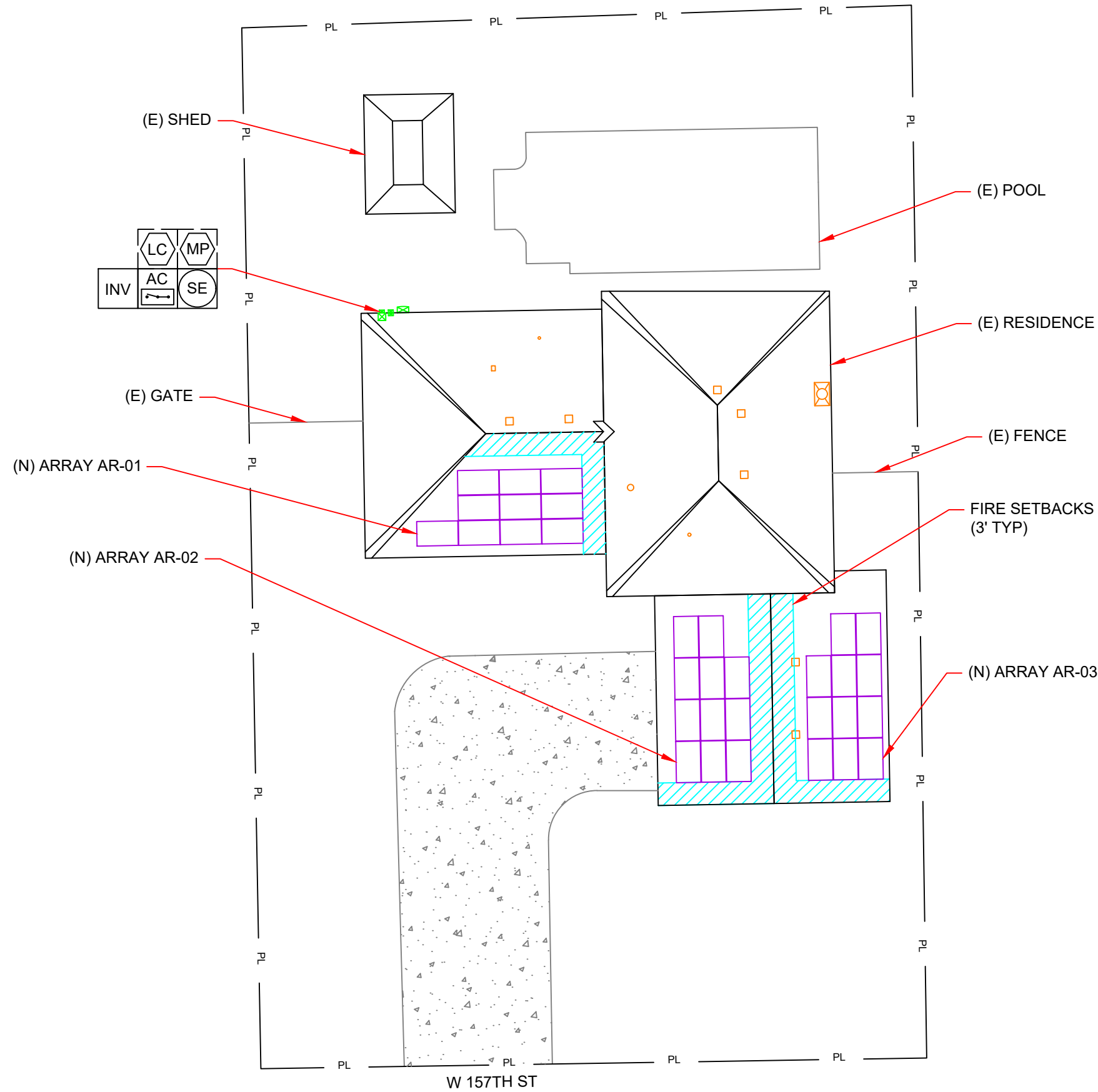
DESIGNER: (720) 475-7809
DREW CLARK

SHEET
COVER SHEET

REV: A.1 9/17/2018

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PV-1.0

SITE PLAN - SCALE = 1/16" = 1'-0"



	ARRAY PITCH	TRUE AZIM	MAG AZIM	PV AREA (SQFT)
AR-01	18°	180°	183°	179.7
AR-02	18°	270°	273°	197.7
AR-03	18°	90°	93°	197.7

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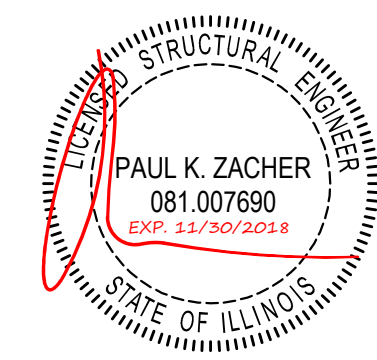
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SITE PLAN

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	ROOF TYPE	MOUNTING DETAIL	ROOF HEIGHT	ROOF EXPOSURE	FRAME MATERIAL	FRAME TYPE	FRAME SIZE	MAX FRAME SPAN	OC SPACING	ROOF EDGE ZONE	MAX PEN SPACING	MAX MOD. OVERHANG
AR-01	COMP SHINGLE	FLASHED L FOOT. SEE PEN D03.	1 STORY	ATTIC	WOOD	RAFTER	2 X 8	12' - 6"	16"	3' - 0"	4' - 0"	1' - 4"
AR-02	COMP SHINGLE	FLASHED L FOOT. SEE PEN D03.	1 STORY	ATTIC	WOOD	RAFTER	2 X 8	9' - 11"	16"	3' - 0"	4' - 0"	1' - 4"
AR-03	COMP SHINGLE	FLASHED L FOOT. SEE PEN D03.	1 STORY	ATTIC	WOOD	RAFTER	2 X 8	9' - 11"	16"	3' - 0"	4' - 0"	1' - 4"

DESIGN CRITERIA

MODULES:
REC SOLAR: REC290TP2 BLK

MODULE DIMS:
65.94" x 39.25" x 1.49" (38mm)

MODULE CLAMPS:
Portrait: 8.2" - 16.4"
Landscape: 4.9" - 9.8"

MAX DISTRIBUTED LOAD: 3 PSF

SNOW LOAD: 30 PSF

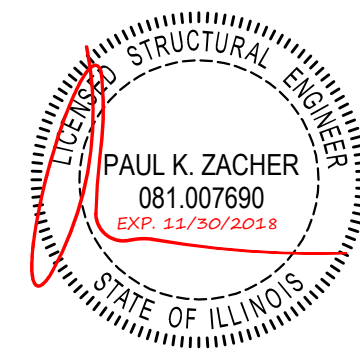
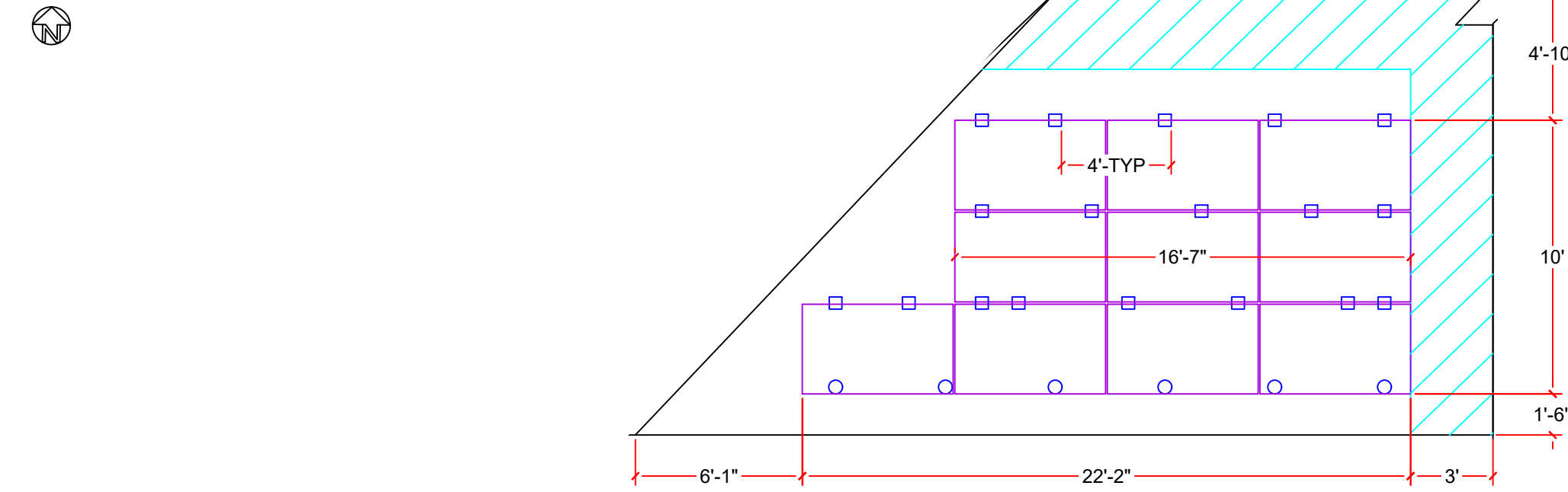
WIND SPEED:
115 MPH 3-SEC GUST.

LAG SCREWS:
5/16"x3.5": 2.5" MIN EMBEDMENT

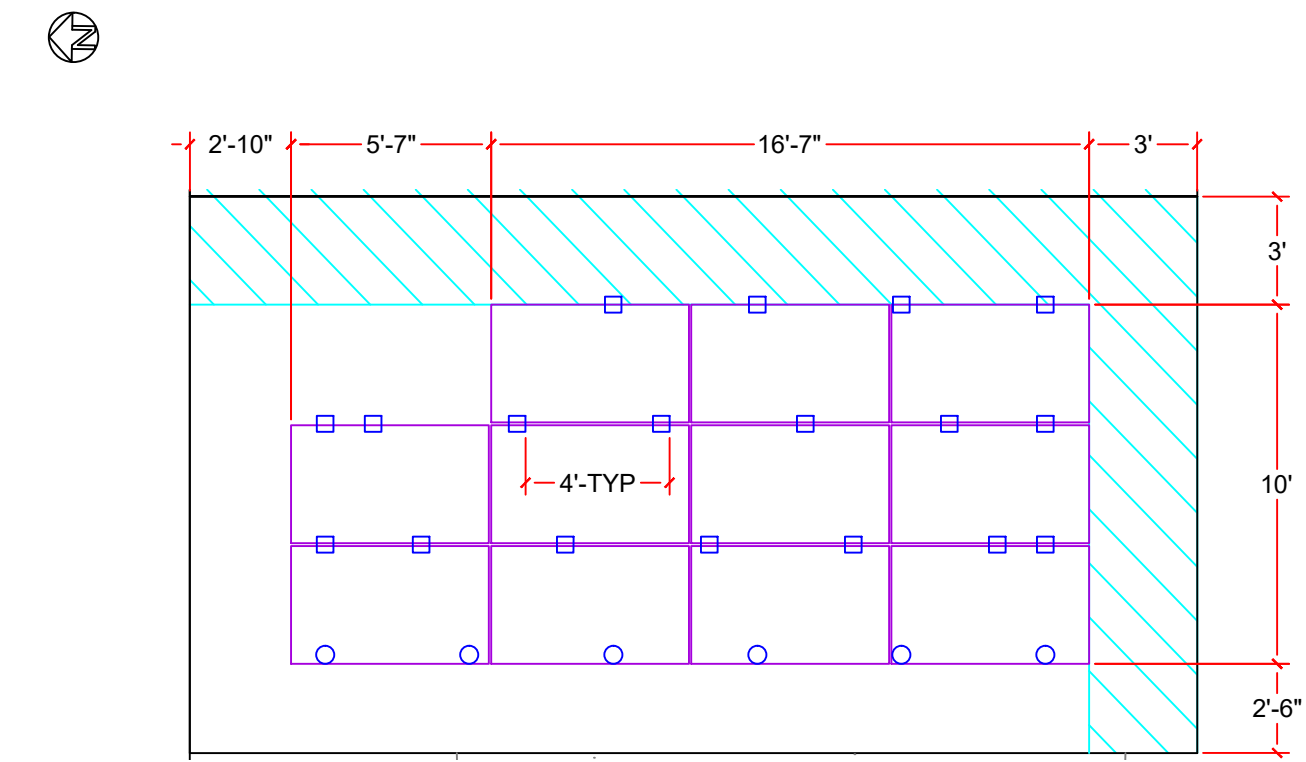
NOTE:
INSTALLERS TO VERIFY RAFTER SIZE, SPACING AND SLOPED SPANS, AND NOTIFY E.O.R. OF ANY DISCREPANCIES BEFORE PROCEEDING.

PENETRATION SPACING:
FULLY STAGGERED

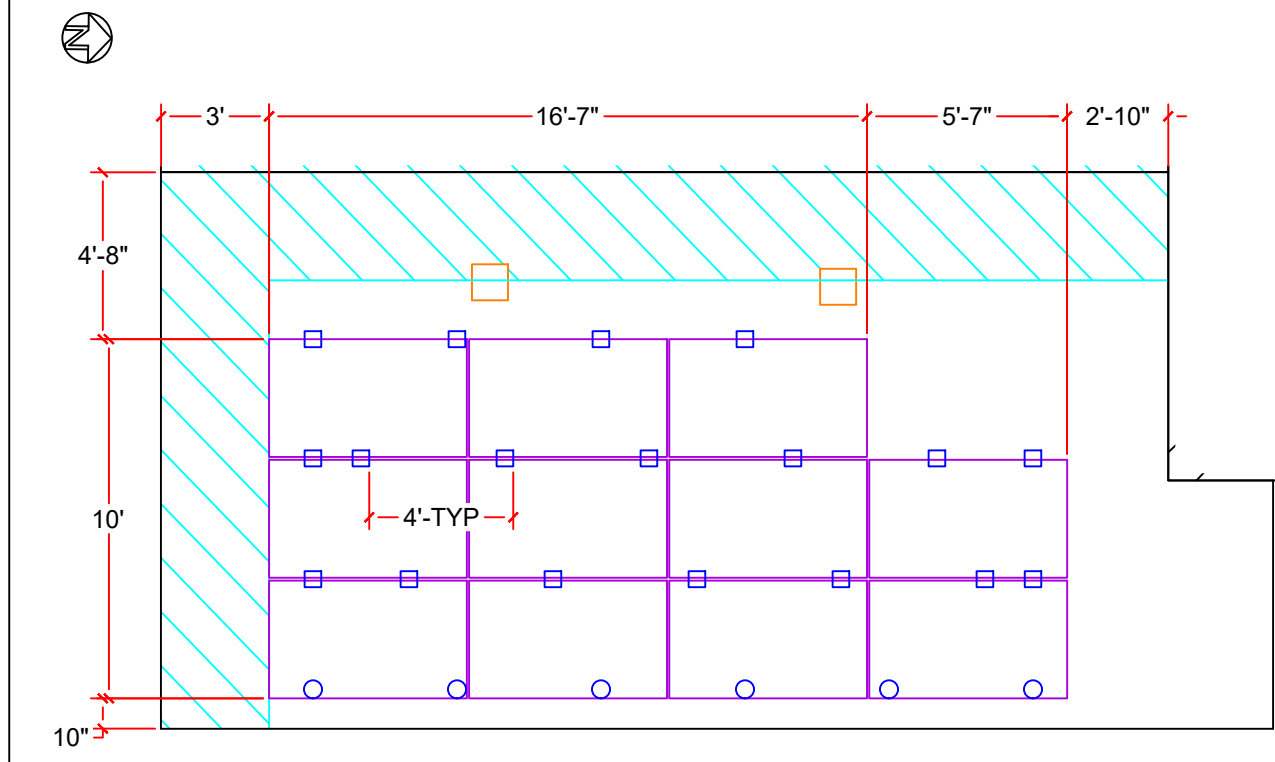
D1 - AR-01 - SCALE: 3/16" = 1'-0"
PITCH: 18°
AZIM: 180°



D2 - AR-02 - SCALE: 3/16" = 1'-0"
PITCH: 18°
AZIM: 270°



D3 - AR-03 - SCALE: 3/16" = 1'-0"
PITCH: 18°
AZIM: 90°



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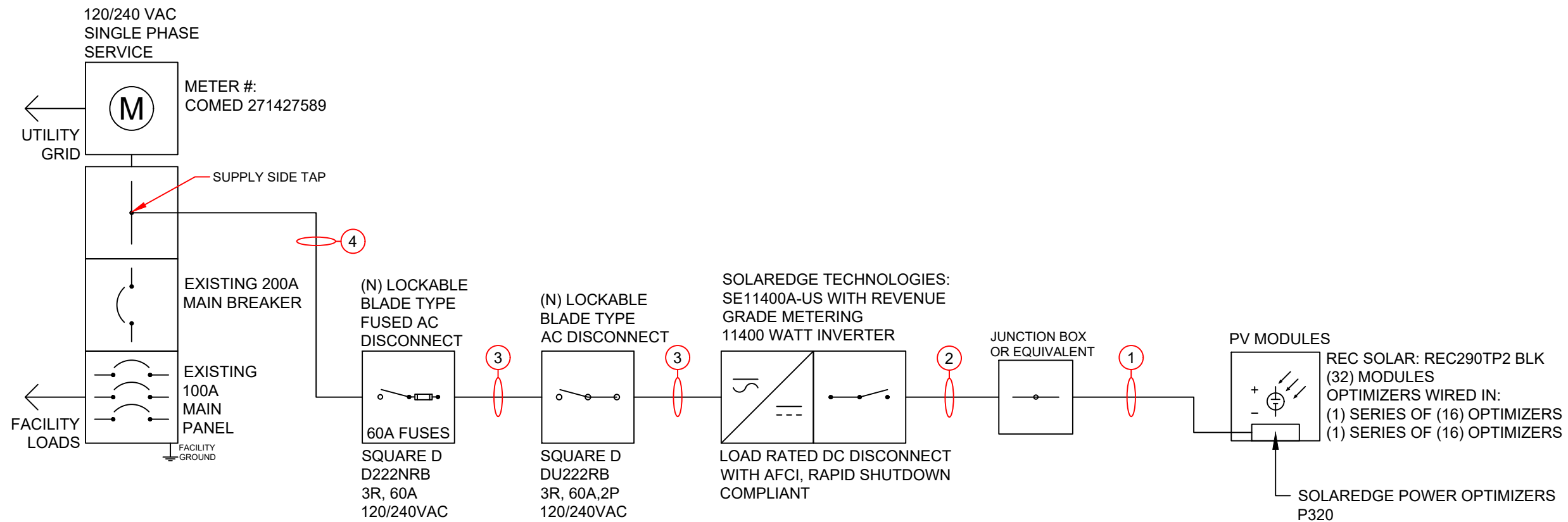
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SHEET
LAYOUT

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CONDUIT SCHEDULE

#	CONDUIT	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(2) 10 AWG PV WIRE	NONE	(1) 10 AWG BARE COPPER
2	3/4" EMT OR EQUIV.	(2) 10 AWG THHN/THWN-2	NONE	(1) 10 AWG THHN/THWN-2
3	1" EMT OR EQUIV.	(2) 4 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2

NOTES TO INSTALLER:

- 16 VDC EXPECTED OPEN CIRCUIT STRING VOLTAGE.
- CONNECT SYSTEM VIA INSULATION PIERCING ON SUPPLY SIDE OF MAIN BREAKER IN MAIN PANEL ENCLOSURE. CONDUCTORS ARE FIELD INSTALLED.

MODULE CHARACTERISTICS

REC SOLAR: REC290TP2 BLK: 290 W
 OPEN CIRCUIT VOLTAGE: 38.8 V
 MAX POWER VOLTAGE: 32.1 V
 SHORT CIRCUIT CURRENT: 9.71 A

P320 OPTIMIZER CHARACTERISTICS:

MIN INPUT VOLTAGE: 8 VDC
 MAX INPUT VOLTAGE: 48 VDC
 MAX INPUT ISC: 11 ADC
 MAX OUTPUT CURRENT: 15 ADC

SYSTEM CHARACTERISTICS - INVERTER 1

SYSTEM SIZE: 9280 W
 SYSTEM OPEN CIRCUIT VOLTAGE: 16 V
 SYSTEM OPERATING VOLTAGE: 350 V
 MAX ALLOWABLE DC VOLTAGE: 500 V
 SYSTEM OPERATING CURRENT: 26.51 A
 SYSTEM SHORT CIRCUIT CURRENT: 30 A

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SHEET
ELECTRICAL

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! WARNING
ELECTRICAL SHOCK HAZARD
 DO NOT TOUCH TERMINALS. TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
 INVERTER(S), AC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE).
 PER CODE(S): CEC 2016: 690.17(E), NEC 2014: 690.17(E), NEC 2011: 690.17(4)

! WARNING
ELECTRICAL SHOCK HAZARD
 IF GROUND FAULT IS INDICATED ALL NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

LABEL LOCATION:
 INVERTER(S), ENPHASE ENVOY ENCLOSURE (IF APPLICABLE).
 PER CODE(S): CEC 2016: 690.5(C), NEC 2014: 690.5(C), NEC 2011: 690.5(C)

INVERTER 1

PHOTOVOLTAIC DC DISCONNECT

RATED MAXIMUM POWER-POINT CURRENT:	26.51	ADC
RATED MAXIMUM POWER-POINT VOLTAGE:	350	VDC
MAXIMUM SYSTEM VOLTAGE:	500	VDC
MAXIMUM SHORT CIRCUIT CURRENT:	30	ADC

LABEL LOCATION:
 INVERTER(S), DC DISCONNECT(S).
 PER CODE(S): CEC 2016: 690.53, NEC 2017: 690.53, NEC 2014: 690.53, NEC 2011: 690.53

! WARNING
ELECTRICAL SHOCK HAZARD
 THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

LABEL LOCATION:
 INVERTER(S), DC DISCONNECTS.
 PER CODE(S): CEC 2016: 690.35(F), NEC 2014: 690.35(F), NEC 2011: 690.35(F)

! WARNING
DUAL POWER SUPPLY
 SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL LOCATION:
 UTILITY SERVICE METER AND MAIN SERVICE PANEL.
 PER CODE(S): CEC 2016: 705.12(D)(3), NEC 2014: 705.12(D)(3), NEC 2011: 705.12(D)(4)

! WARNING
INVERTER OUTPUT CONNECTION
 DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
 ADJACENT TO PV BREAKER (IF APPLICABLE).
 PER CODE(S): CEC 2016: 705.12(D)(2)(3)(b), NEC 2014: 705.12(D)(2)(3)(b), NEC 2011: 705.12(D)(7)

! WARNING
PHOTOVOLTAIC SYSTEM COMBINER PANEL
 DO NOT ADD LOADS

LABEL LOCATION:
 PHOTOVOLTAIC AC COMBINER (IF APPLICABLE).
 PER CODE(S): CEC 2016: 705.12(D)(2)(3)(c), NEC 2014: 705.12(D)(2)(3)(c), NEC 2011: 705.12(D)(4)

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
 INTERIOR AND EXTERIOR DC CONDUIT EVERY 10 FT, AT EACH TURN, ABOVE AND BELOW PENETRATIONS, ON EVERY JB/PULL BOX CONTAINING DC CIRCUITS.
 PER CODE(S): CEC 2016: 690.31(G)(3), 690.31(G)(4), NEC 2014: 690.31(G)(3), 690.31(G)(4), NEC 2011: 690.31(E)(3), 690.31(E)(4), IFC 2012: 605.11.1.4

PHOTOVOLTAIC AC DISCONNECT
 MAXIMUM AC OPERATING CURRENT: 47.50 AMPS
 NOMINAL OPERATING AC VOLTAGE: 240 VAC

LABEL LOCATION:
 AC DISCONNECT(S), PHOTOVOLTAIC SYSTEM POINT OF INTERCONNECTION.
 PER CODE(S): CEC 2016: 690.54, NEC 2014: 690.54, NEC 2011: 690.54

NOTES AND SPECIFICATIONS:

- SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE NEC 2011 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
- SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
- LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
- LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
- DO NOT COVER EXISTING MANUFACTURER LABELS.

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SHEET
SIGNAGE

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